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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,753	11/17/2003	Leonard Forbes	400.260US01	3377
27073	7590	08/04/2005	EXAMINER	
LEFFERT JAY & POLGLAZE, P.A.			LE, THAO P	
P.O. BOX 581009			ART UNIT	
MINNEAPOLIS, MN 55458-1009			PAPER NUMBER	
			2818	

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/714,753	Applicant(s) FORBES, LEONARD	
	Examiner Thao P. Le	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/17/03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/26/04, 05/31/05</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restriction

Examiner confirms that Applicants elected to prosecute Claims 1-11, 23 without prejudice.

Information Disclosure Statement

Information Disclosure Statement (IDS) filed on **05/26/04, 05/31/05** and made of record. The references cited on the PTOL 1449 form have been considered.

Claim Objection

Claim 11 is objected because of grammatical error: "...a first source/drain regions operates...".

Claim Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international

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application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-8, 10-11, 23 are rejected under 35 USC 102 (e) as being anticipated by Fried et al., U.S. Patent No. 6,657,252.

Regarding claims 1, 23, Fried et al. discloses an NROM transistor comprising: an ultra-thin SOI 104 having two source/drain regions separated by a normally fully depleted body region (Cols. 2-3), an oxide layer 110 (20-30, Col.5) formed above source/drain regions, a gate insulator 115 (floating gate) capable of storing charges and a control gate 120 formed on the gate insulator. Still regarding claim 23, it is inherent that the NROM couple to a processor that generates control signals for the system.

Regarding claims 2-6, Fried et al. discloses the gate insulator is ONO and the transistor has a planar structure (Figs 1-11).

Regarding claims 7-8, Fried et al. discloses the device is read only memory ROM, it is inherent that transistor of ROM has a NAND or NOR architecture.

Claims 1-11, 23 are rejected under 35 USC 102 (e) as being anticipated by Forbes, U.S. Patent No. 6,830,963.

Regarding claim 10, Fried et al. discloses the control gate 120 comprises polysilicon material.

Regarding claim 11, it is inherent that source/drain regions operate as drain (or source) and the other as a source (or drain) as the cell operates in each direction.

Mohsen et al., U.S. Patent No. 4,881,114 also discloses the limitations of claims 1, 23.

Claims 1, 23 are rejected under 35 USC 102 (b) as being anticipated by Mohsen et al., U.S. Patent No. 4,881,114.

Regarding claims 1, 23, Mohsen et al. discloses an NROM transistor (See Figs. 9A-9C) comprising: an ultra-thin SOI 200 having two source/drain regions 214 separated by a normally fully depleted body region, an oxide layer 208 formed above source/drain regions 214, a gate insulator 220 capable of storing charges and a control gate 222 formed on the gate insulator. Still regarding claim 23, it is inherent that the NROM couple to a processor that generates control signals for the system.

Claims 1-11, 23 are rejected under 35 USC 102 (e) as being anticipated by Forbes, U.S. Patent No. 6,830,963.

Regarding claims 1, 9, 23, U.S. Patent No. 6,830,963 discloses an NROM flash memory cell comprising an ultra-thin SOI layer having two source/drain regions separated by a normally fully depleted body region 403 (Fig. 4), an oxide layer formed above each of the source/drain regions (OXIDE, Fig. 4), a gate insulator 405 formed over the body region and oxide layer, the gate insulator capable of storing a plurality of charges when the cell is operated in a first direction and second direction (ONO, floating gate), and a control gate formed on the gate insulator (CONTROL, Fig. 4). Still

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regarding claim 9, U.S. Patent No. 6,830,963 discloses the SOI layer has a thickness less than 100 nm. Still regarding claim 23, it is inherent that the NROM couple to a processor that generates control signals for the system.

Regarding claims 2-5, U.S. Patent No. 6,830,963 discloses the gate insulator is ONO, silicon oxide, silicon nitride, silicon oxide, oxide-nitride-aluminum oxide, silicon-rich oxide composite structures.

Regarding claims 6-8, U.S. Patent No. 6,830,963 discloses the transistor has a planar structure (Fig. 4 shows the transistor is planar) and has a NAND or NOR architecture.

Regarding claims 10-11, U.S. Patent No. 6,830,963 discloses the control gate is polysilicon, and it is inherent that a first source or drain region operates as a drain region when the cell is operated in the first direction and as a source region when the cell is operated in the second direction.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fried et al., U. Patent No. 6,657,252.

Regarding claim 9, Fried et al. discloses an NROM transistor comprising: an ultra-thin SOI 104 having two source/drain regions separated by a normally fully depleted body region (Cols. 2-3), an oxide layer 110 (20-30, Col.5) formed above source/drain regions, a gate insulator 115 (floating gate) capable of storing charges and a control gate 120 formed on the gate insulator. Still regarding claim 9, Fried doesn't disclose the thickness of the SOI layer, however, it is obvious that the selection of parameters such as **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, would have been obvious and involve routine optimization which has been held to be within the level of ordinary skill in the art. "Normally, it is to be expected that a change in **energy, concentration, temperature, time, molar fraction, depth, thickness, etc.**, or in combination of the parameters would be an unpatentable modification. Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality.... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller* 105 USPQ233, 255 (CCPA 1955). See also *In re Waite* 77 USPQ 586 (CCPA 1948); *In re Scherl* 70 USPQ 204 (CCPA 1946); *In re Irmischer* 66 USPQ 314 (CCPA 1945); *In re Norman* 66 USPQ 308 (CCPA 1945);

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In re Swenson 56 USPQ 372 (CCPA 1942); *In re Sola* 25 USPQ 433 (CCPA 1935); *In re Dreyfus* 24 USPQ 52 (CCPA 1934).

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-T (7-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thao P. Le'.

Thao P. Le

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